

# TWO NEW SPECIES OF CAMPANULARIAN HYDROIDS FROM SOUTH AFRICA

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(With 2 figures)

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## ABSTRACT

Two new hydroid species of the family Campanulariidae are described from False Bay, South Africa, namely *Campanularia pecten* and *Campanularia roberti*. Both are unusual in the form of the gonotheca which is shaped like a bivalve shell.

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## INTRODUCTION

These two small species were discovered by the first author during the preparation of a project for an honours degree at the University of Cape Town in 1968. Both colonies were fertile and were retained alive in the laboratory until the release of the products of the gonothecae. Microscopic examinations were made of fresh material and permanent stained mounts, a useful technique being to slip an empty hydrotheca onto a fine insect pin and rotate it into different positions.

## DESCRIPTION OF MATERIAL

### *Campanularia pecten* sp. nov.

Fig. 1

*Holotype*: St James, False Bay, on the sea-grass *Caulerpa fliformis* (Suhr.), just below L.W.S. Collected 29 March 1968. Catalogue number: SAM H1659.

### *Description*

Hydrorhiza creeping and reticular, giving rise to solitary hydrothecae and gonothecae. Hydrothecal pedicel smooth, constricted at base, with a single

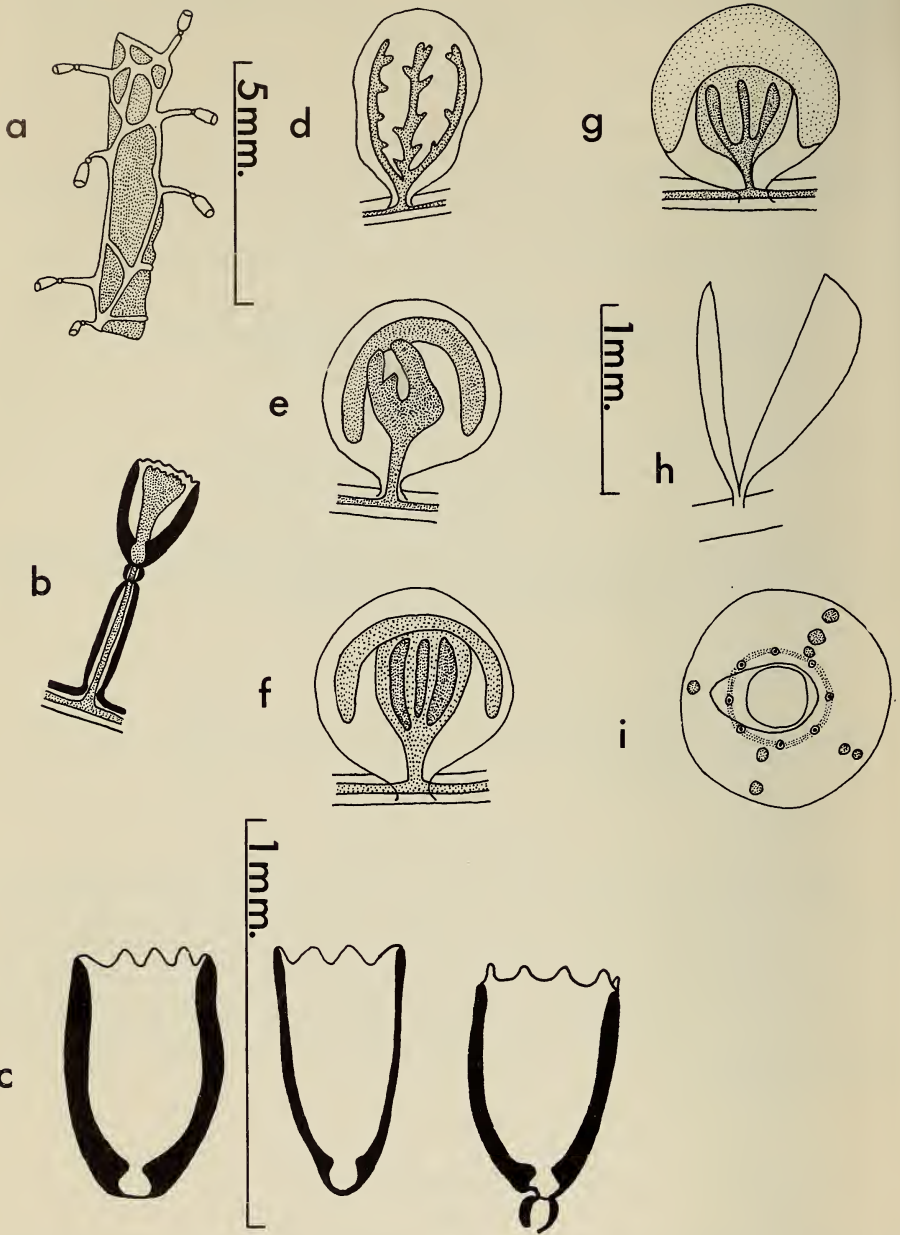


Fig. 1. *Campanularia pecten* sp. nov.

a, colony on *Caulerpa*; b, hydrotheca and pedicel; c, hydrothecae, the centre one in end-on view; d-g, gonophores in various stages of development; h, empty gonotheca, side view; i, medusoid, showing from the centre outwards: opening to subumbrellar cavity, exumbrellar aperture, ring of statocysts, gonads on radial canals.

terminal spherule and with thickened perisarc. Irregular nodes sometimes present due to regeneration.

Hydrotheca deep-campanulate, slightly compressed, with toothed margin. Marginal teeth generally nine in number, rarely ten, usually narrower than the bays between them, with bluntly rounded apices. Perisarc generally strongly thickened on two opposite sides imparting a bilateral symmetry and an oval cross-section. An annular perisarc thickening present near base demarcating a spherical basal chamber.

Gonotheca borne directly on hydrorhiza on a short, smooth pedicel, scallop-shaped, rounded in broad view, opening around the circumference like a bivalve shell and with one valve considerably flatter than the other, sometimes with concentric ridges on the outer surface of the deeper valve. Gonophore (only male present) eumedusoid, with four radial canals with the gonads distributed along their length, with eight statocysts, without hypostome or marginal tentacles, with a short free-living existence.

#### Measurements (mm)

Pedicel, length . . . . .	0,52-1,74
maximum diameter . . . . .	0,10-0,20
Hydrotheca, depth . . . . .	0,51-0,69
diameter at mouth (broad view) . . . . .	0,24-0,41
diameter at mouth (narrow view) . . . . .	0,30-0,33
Gonotheca, length including pedicel . . . . .	0,93-1,09
maximum diameter . . . . .	0,68-1,20

#### Remarks

In the early stages of development the gonotheca is oval in broad view, becoming circular later. At this early stage the four branching radial canals are clearly visible, but they become obscured later by the developing gonads. Three eumedusae were released from the gonothecae in the laboratory and were retained alive for 24 hours, during which period they reached a diameter of 0,9-1,0 mm. They performed periodical spasms of contraction. The gonads at this stage consisted of a number of small spherical aggregations along the radial canals and were presumably partly spent. The exumbrellar surface of the medusoid appeared to be pierced by an asymmetrical elliptical aperture.

#### *Campanularia roberti*\* sp. nov.

Fig. 2

*Holotype*: Partridge Point, False Bay, on the weed *Sargassum longifolium* (Turn.) attached to *Ecklonia maxima* (Osbeck). Collected 24 March 1968. Catalogue number: SAM H1660.

\* Named after Robert W. Day, who collected the material.

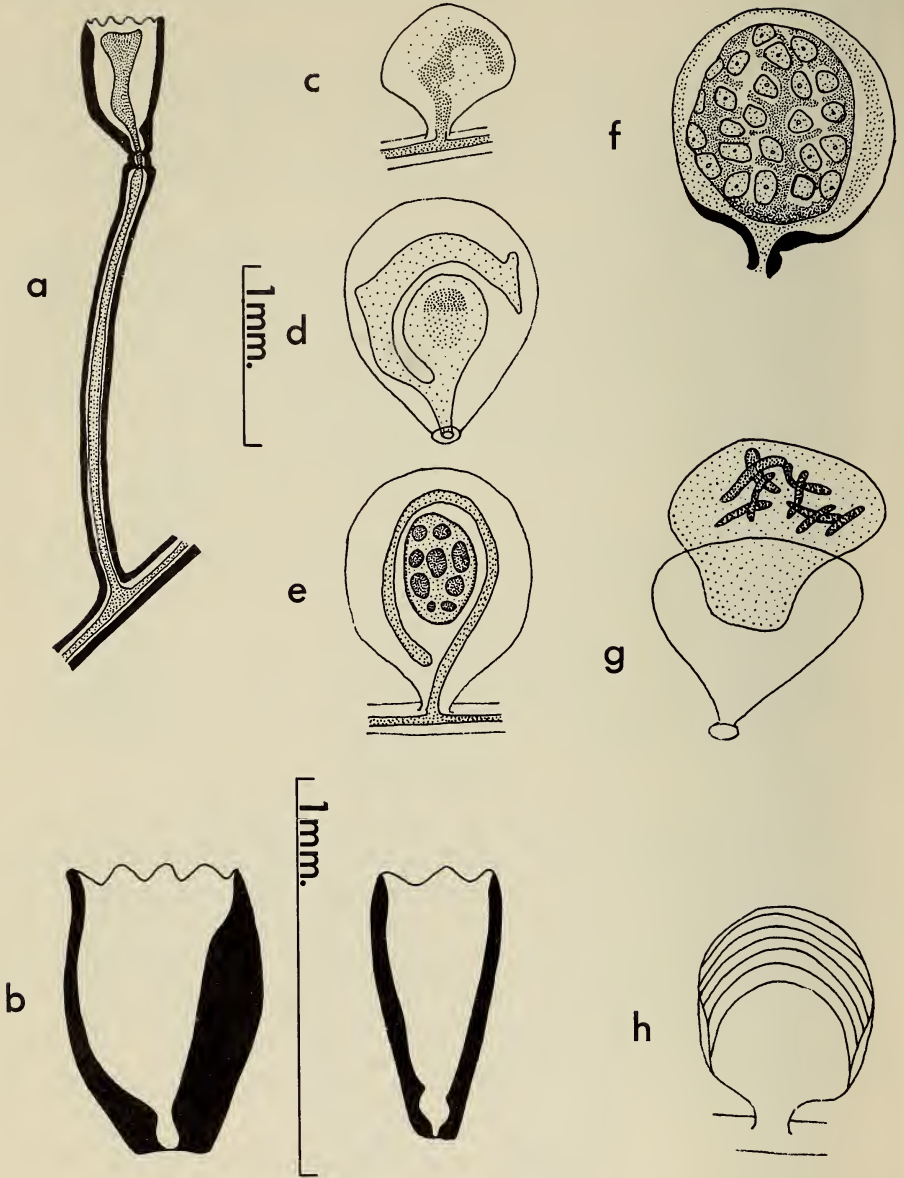


Fig. 2. *Campanularia roberti* sp. nov.

a, hydrotheca and pedicel; b, hydrothecae, left in broad view, right in end-on view; c-f, gonophores in various stages of development, f showing the branching radial canals; g, mature gonotheca with gonophore containing planulae squeezed out of opening; h, upper view of gonotheca showing concentric ridges.

*Description*

Hydrorhiza creeping and reticular, giving rise to solitary hydrothecae and gonothecae. Hydrothecal pedicel smooth, with a single terminal spherule, with thickened perisarc. Regeneration nodes present in some.

Hydrotheca deep-campanulate, slightly compressed, with toothed margin. Marginal teeth generally nine in number, rarely ten, triangular with bluntly rounded apices. Perisarc generally strongly thickened on two opposite sides and more so on one side than the other, imparting an oval cross-section and an asymmetrical appearance when viewed from the broad side. An annular perisarcal thickening present near base demarcating a spherical basal chamber.

Gonotheca borne directly on hydrorhiza on a short, smooth pedicel, scallop-shaped, rounded in broad view, opening around the circumference like a bivalve shell, recumbent and held with the flat lower surface against the weed; upper valve curved above, thicker than lower valve, with distinct concentric ridges when mature. Gonophore (only female present) in the form of a fixed sporosac, with four branching radial canals but no other medusoid structures, containing over 30 large eggs between the diverticuli of the radial canals. Eggs fertilized and developing into planulae within the gonotheca.

*Measurements (mm)*

Pedicel length . . . . .	0,40–2,66
maximum diameter . . . . .	0,13–0,24
Hydrotheca, depth . . . . .	0,64–0,88
diameter at mouth (broad view) . . . . .	0,38–0,55
diameter at mouth (narrow view) . . . . .	0,30–0,46
Gonotheca, length including pedicel . . . . .	0,75–1,50
maximum diameter . . . . .	0,69–1,28

## DISCUSSION

These two species are clearly closely related. Both belong to the hydranth genus *Orthopyxis* L. Agassiz, 1862, and *Campanularia pecten* belongs to the medusa genus *Agastra* Hartlaub, 1897. These two genera are now commonly included in *Campanularia* Lamarck, 1816 (Naumov 1960; Vervoort 1972; Millard & Bouillon 1974).

It is possible that *C. pecten* is the male and *C. roberti* the female of a single species, for it is not unknown among the hydroids for sexual dimorphism to occur and for the gonophore of one sex to reach a less advanced stage of development than the other. However, there are certain differences in the trophosome which distinguish the two and which support the retention of two species at least until further material is forthcoming. Thus, the hydrotheca of *C. roberti* is characteristically asymmetrical, with thicker perisarc on one side than the other, whereas *C. pecten* has the perisarc symmetrically thickened at the two narrow ends. Further, the hydrothecae of *C. roberti* are slightly

larger than those of *C. pecten*, although there is an overlap between them. Finally the marginal thecal teeth of *C. roberti* are in general slightly wider than those of *C. pecten*.

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